

## REMARKS

The Office Action of August 4, 2010 was received and carefully reviewed.

Claims 1-25 were pending prior to this response. In this amendment, independent claims 1-4 and 14-17 are amended to further clarify that the substance in the base film with the photocatalytic function contains an oxygen defect. Support for this amendment may be found, at least in lines 18-24 on page 6 of the originally submitted specification. Claims 6-9 and 19-22 are amended to incorporate features recited in the previously presented claim 10 or 23, respectively. Accordingly, claims 10 and 23 are canceled without prejudice. Amendment is also made to claim 15 to correct a minor error. Consequently, claims 1-9, 11-22 and 24-25 are currently pending.

No new matter has been added through these amendments. Reconsideration and withdrawal of the currently pending rejections are requested for the reasons advanced in detail below.

On page 2 of the Office Action, the examiner rejects claims 1, 2, 5, 6, 7, 10, 13, 14, 15, 18, 19, 23, and 24 under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Application Publication No. 2001/0055841 A1 to Yamazaki et al. (“Yamazaki ‘841”) in view of JP 2003-058077 A to Takao (“Takao”) and U.S. Patent No. 6,355,941 to Yamazaki et al. (“Yamazaki ‘941”). Moreover, on page 10 of the Office Action, the examiner rejects claims 3, 8, 16, and 21 under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki ‘841 in view of Takao. Applicants traverse the rejections for at least the following reasons.

Applicants respectfully submit that independent claims 1-4, 6-9, 14-17, and 19-22, and the claims dependent therefrom, are patentably distinguishable over Yamazaki ‘841, Takao, and Yamazaki ‘941, taken either alone or in combination, since these references fail to disclose, teach, or suggest each and every feature recited in the pending claims.

For example, independent claims 1-4 and 14 to 17 are amended to recite an additional feature: “the substance with the photocatalytic function contains an oxygen defect.” *See, e.g., lines 18-24 on page 6 of the originally submitted specification.* The aforementioned claimed feature is advantageous partially because using the substance with a photocatalytic function containing an oxygen defect can enhance photocatalytic activity. This is sufficiently described in the specification: “... photocatalytic activity can be enhanced by doping a transition metal ... into the photocatalytic substance, and photocatalytic activity can be caused by light of a visible light region (wavelength: from 400 nm to 800 nm),” and

“[w]ithout doping the transition element, an oxygen defect plays a similar role to an electron donor in this way.” *See, for example, lines 7-24 of the originally submitted specification.*

The examiner acknowledges that Yamazaki ‘841 is silent relating to a base film including a substance with a photocatalytic function on a substrate, and relies upon Takao for teaching this feature. *See, e.g., page 3 of the Office Action.* Takao, however, fails to teach or suggest the aforementioned feature, i.e. “the substance with the photocatalytic function contains an oxygen defect,” and the benefit associated with this feature. In this regard, neither Yamazaki ‘841 nor Yamazaki ‘941 cure the deficiency in Takao.

Independent claims 6-9 and 19-22 are amended to recite the features previously contained in claim 10 or 23: “wherein the refractory metal is selected from the group consisting of Ti (titanium), W (tungsten), Cr (chromium), Al (aluminum), Ta (tantalum), Ni (nickel), Zr (zirconium), Hf (hafnium), V (vanadium), Ir (iridium), Nb (niobium), Pd (lead), Pt (platinum), Mo (molybdenum), Co (cobalt), and Rh (rhodium).”

In the Office Action, the examiner acknowledges that Yamazaki ‘841 is silent relating to a conducting layer including a refractive metal over a substrate having an insulating surface, and relies upon Takao for teaching this feature. *See, e.g., page 6 of the Office Action.* The examiner asserts that Takao discloses the use of Ti (titanium) as a refractory metal in conductive layer in paragraph [0012], and subsequently concluded that the prior art references therefore discloses that the refractory metal is selected from the group consisting of Ti (titanium), W (tungsten), Cr (chromium), Al (aluminum), Ta (tantalum), Ni (nickel), Zr (zirconium), Hf (hafnium), V (vanadium), Ir (iridium), Nb (niobium), Pd (lead), Pt (platinum), Mo (molybdenum), Co (cobalt), and Rh (rhodium). However, what is disclosed in paragraph [0012] of Takao is TiO<sub>2</sub>, not Ti. *See, Takao, paragraph [0012].* In fact, no refractory metal was taught or suggested in Takao. In this regard, neither Yamazaki ‘841 nor Yamazaki ‘941 cure the deficiency in Takao.

For at least the above-stated reasons, Yamazaki ‘841, Takao, and Yamazaki ‘941, taken either alone or in combination, do not render Applicants’ invention obvious as claimed in claims 1-4, 6-9, 14-17, and 19-22. Claims 5, 11-13, 18, and 24-25 are allowable at least by virtue of their dependency from one of the independent claims, but also because they are distinguishable over the prior art.

Accordingly, Applicants respectfully request the withdrawal of the rejection under 35 U.S.C. § 103.

## CONCLUSION

In view of the foregoing remarks, this claimed invention, as amended, is not rendered obvious in view of the prior art references cited against this application. Applicants therefore request the entry of this response, the examiner's reconsideration and reexamination of the application, and the timely allowance of the pending claims.

In discussing the specification, claims, and drawings in this response, it is to be understood that Applicants in no way intend to limit the scope of the claims to any exemplary embodiments described in the specification and/or shown in the drawings. Rather, Applicants are entitled to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

**Except** for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account No. 19-2380. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

Respectfully submitted,

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